network, comprising the steps of:

generating a computerized model of a space, said space having a plurality of different objects therein each of which may have attributes which impact performance of a network;

establishing a desired performance metric for at least one selected location within said space;

modeling performance attributes of a plurality of different components which may be used in said network;

specifying components from said plurality of different components to be used in said network;

specifying locations within said space for a plurality of different components in said computerized model;

predicting a predicted performance metric for said at least one selected location within said space based on said selected components and said selected locations; and

comparing said predicted performance metric to said desired performance metric.

Claim 20 (new). The method of claim 19 wherein said steps of specifying components and specifying locations is performed automatically multiple times until a desired comparison result is obtained in said comparing step.

Claim 21 (new). The method of claim 19 further comprising the step of specifying a configuration for said selected components.

Claim 22 (new). The method of claim 21 wherein said step of specifying a configuration includes the step of defining an orientation of said selected component in said space at said selected location.

Claim 23 (new). The method of claim 21 wherein one or more of said steps of specifying components, specifying locations, and specifying a configuration are performed automatically multiple times until a desired comparison result is

obtained in said comparing step.

Claim 24 (new). The method of claim 19 wherein at least some of said components specified in said specifying step are wireless communication components.

Claim 25 (new). The method of claim 24 wherein at least some of the wireless communication components are from a category including antennas, transmitters, receivers and transceivers.

Claim 26 (new). The method of claim 19 wherein said desired performance metric and said predicted performance metric are selected from the group consisting of received signal strength intensity, throughput, bandwidth, quality of service, bit error rate, packet error rate, frame error rate, dropped packet rate, packet latency, round trip time, propagation delay, transmission delay, processing delay, queuing delay, capacity, packet jitter, bandwidth delay product, handoff delay time, signal-to-interference ratio, signal-to-noise ratio, hand off zones, traffic load, position location accuracy, physical equipment price, maintenance requirements, depreciation and installation cost.

Claim 27 (new). The method of claim 19 wherein said computerized model of said space is three dimensional.

Claim 28 (new). The method of claim 19 wherein said step of selecting locations is performed with a graphical interface.

Claim 29 (new). The method of claim 19 wherein said step of specifying locations is performed by specifying a location attribute for said selected components.

Claim 30 (new). The method of claim 19 wherein said network is a wireless communications network.

Claim 31 (new). A site specific apparatus for designing, deploying or optimizing a network, comprising:

a computerized model of a space, said space having a plurality of different objects therein each of which may have attributes which impact performance of a network;

device for establishing a desired performance metric for at least one selected location within said space;

computerized models of performance attributes of a plurality of different components which may be used in said network;

specifier specifying components from said plurality of different components to be used in said network;

specifier specifying locations within said space for a plurality of different components in said computerized model;

predictor predicting a predicted performance metric for said at least one selected location within said space based on said selected components and said selected locations; and

comparator comparing said predicted performance metric to said desired performance metric.

Claim 32 (new). The apparatus of claim 31 further comprising specifier specifying a configuration for said selected components.

Claim 33 (new). The apparatus of claim 32 wherein said specifier specifying a configuration defines an orientation of a specified component in said space at a selected location.

Claim 34 (new). The apparatus of claim 31 wherein at least some of said components are wireless communication components.

Claim 35 (new). The apparatus of claim 34 wherein at least some of the wireless communication components are from a category including antennas, transmitters, receivers and transceivers.

Claim 36 (new). The apparatus of claim 31 wherein said desired performance metric and said predicted performance metric are selected from the group consisting of received signal strength intensity, throughput, bandwidth, quality of service, bit error rate, packet error rate, frame error rate, dropped packet rate, packet latency, round trip time, propagation delay, transmission delay, processing delay, queuing delay, capacity, packet jitter, bandwidth delay product, handoff delay time, signal-to-interference ratio, signal-to-noise ratio, hand off zones, traffic load, position location accuracy, physical equipment price, depreciation, maintenance requirements and installation cost.

Claim 37 (new). The apparatus of claim 31 wherein said computerized model of said space is three dimensional.

Claim 38 (new). The apparatus of claim 31 wherein said network includes wireless communication components.

Claim 39 (new). The apparatus of claim 32 wherein one or more of said specifier specifying components, said specifier specifying locations, and said specifier specifying a configuration are performed automatically multiple times until a desired comparison result is obtained.

Claim 40 (new). The apparatus of claim 32 wherein said selector selecting locations is performed with a graphical interface.

Claim 41 (new). The apparatus of claim 32 wherein said specifier specifying locations specifies a location attribute for said selected components.

Claim 42 (new). A site specific system for modeling a communications network, comprising:

a display for displaying a site map of a site in which a communications network is or will be deployed;

a computer representation, rendered on said site map on said display, of a

possible configuration of a communications network which includes a plurality of components which are or may be used in the communications network, one or more of said plurality of components having at least one of performance data, cost data, maintenance data, and equipments settings stored in a database;

device for establishing one or more parameters of a desirable configuration of said communications network;

device for changing at least one of

a) one or more components within said configuration of said communications network, and

b) equipment settings of one or more components within said configuration of said communications network;

device for determining predicted or measured parameters for said communications network within for said site computer representation; and

device for determining one or more optimized or preferred configurations of said communications network based on a comparison of predicted or measured parameters generated by said device for determining and said one or more parameters of said desirable configuration established by said device for establishing.

Claim 43 (new). The system of claim 42 wherein said device for determining determines measured parameters for said communications network.

Claim 44 (new). The system of claim 42 wherein said device for determining determines predicted parameters for said communications network.

Claim 45 (new). The system of claim 42 wherein one or more components of said plurality of components are selected from the group consisting of base stations, base station controllers, amplifiers, attenuators, antennas, coaxial cabling, fiber optic cabling, splitters, repeaters, transducers, converters, couplers, leaky feeder cables, hubs, switches, routers, firewalls, MIMO systems, sensors, power distribution lines, wiring, twisted pair cabling and wireless or other access points.

Claim 46 (new). The system of claim 42 wherein said one or more parameters of said desirable configuration are selected from radio signal strength intensity, connectivity, network throughput, bit error rate, frame error rate, signal-to-interference ratio, signal-to-noise ratio, frame resolution per second, traffic, capacity, signal strength, throughput, error rates, packet latency, packet jitter, symbol jitter, quality of service, security, coverage area, bandwidth, server identification parameters, transmitter identification parameters, best server locations, transmitter location parameters, billing information, network performance parameters, C/I, C/N, body loss, height above floor, height above ground, noise figure, secure coverage locations, propagation loss factors, angle of arrival, multipath components, multipath parameters, antenna gains, noise level reflectivity, surface roughness, path loss models, attenuation factors, throughput performance metrics, packet error rate, round trip time, dropped packet rate, queuing delay, signal level, interference level, quality of service, bandwidth delay product, handoff delay time, signal loss, data loss, number of users serviced, user density, locations of adequate coverage, handoff locations, locations of adequate throughput, E_c/I_o, system performance parameters, equipment price, maintenance and cost information, user class or subclass, user type, position location, all in either absolute or relative terms.

Claim 47 (new). The system of claim 42 wherein said device for changing automatically changes in an iterative process a type of component of said one or more components.

Claim 48 (new). The system of claim 42 wherein said device for changing manually changes in an iterative process a type of component of said one or more components.

Claim 49 (new). The system of claim 42 wherein said device for changing automatically changes in an iterative process a manufacturer of said one or more components.

Claim 50 (new). The system of claim 42 wherein said device for changing manually changes in an iterative process a manufacturer of said one or more components.

Claim 51 (new). The system of claim 42 wherein said device for changing automatically changes in an iterative process a location of a component of said one or more components.

Claim 52 (new). The system of claim 42 wherein said device for changing manually changes in an iterative process a location of a component of said one or more components.

Claim 53 (new). The system of claim 42 wherein said device for changing automatically changes in an iterative process one or more of transmit power, channel or frequency, bandwidth, data rate, antenna type, antenna sector or positioning, modulation or coding type, protocol, data rate, switching in a spare component, resetting, or changing settings of a component of said one or more components.

Claim 54 (new). The system of claim 42 wherein said device for changing manually changes in an iterative process one of transmit power, channel or frequency, bandwidth, data rate, antenna type, antenna sector or positioning, modulation or coding type, protocol, data rate, switching in a spare component, resetting, or changing settings of a component of said one or more components.

Claim 55 (new). A site specific method for modeling a communications network, comprising:

displaying a site map of a site in which a communications network is or will be deployed;

configuring a computer representation on said site map on said display a possible configuration of a communications network which includes a plurality of components which are or may be used in the communications network, one or

more of said plurality of components having at least one of performance data, cost data, maintenance data, and equipment settings stored in a database;

establishing one or more parameters of a desirable configuration of said communications network;

changing at least one of

a) one or more components within said configuration of said communications network, and

b) equipment settings of one or more components within said configuration of said communications network;

determining predicted or measured parameters for said communications network within said site generated by said configuring step and said changing step; and

determining one or more optimized or preferred configurations of said communications network based on a comparison of predicted or measured parameters generated by said determining step and said one or more parameters of said desirable configuration established by said establishing step.

Claim 56 (new). The method of claim 55 wherein said determining step determines measured parameters for said communications network.

Claim 57 (new). The method of claim 55 wherein said determining step determines predicted parameters for said communications network.

Claim 58 (new). The method of claim 55 wherein one or more components of said plurality of components are selected from the group consisting of base stations, base station controllers, amplifiers, attenuators, antennas, coaxial cabling, fiber optic cabling, splitters, repeaters, transducers, converters, couplers, leaky feeder cables, hubs, switches, routers, firewalls, MIMO systems, sensors, power distribution lines, wiring, twisted pair cabling and wireless or other access points.

Claim 59 (new). The method of claim 55 wherein said one or more parameters of said desirable configuration are selected from radio signal strength intensity,

connectivity, network throughput, bit error rate, frame error rate, signal-to-interference ratio, signal-to-noise ratio, frame resolution per second, traffic, capacity, signal strength, throughput, error rates, packet latency, packet jitter, symbol jitter, quality of service, security, coverage area, bandwidth, server identification parameters, transmitter identification parameters, best server locations, transmitter location parameters, billing information, network performance parameters, C/I, C/N, body loss, height above floor, height above ground, noise figure, secure coverage locations, propagation loss factors, angle of arrival, multipath components, multipath parameters, antenna gains, noise level reflectivity, surface roughness, path loss models, attenuation factors, throughput performance metrics, packet error rate, round trip time, dropped packet rate, queuing delay, signal level, interference level, quality of service, bandwidth delay product, handoff delay time, signal loss, data loss, number of users serviced, user density, locations of adequate coverage, handoff locations, locations of adequate throughput, E_c/I_o, system performance parameters, equipment price, maintenance and cost information, user class or subclass, user type, position location, all in either absolute or relative terms.

Claim 60 (new). The method of claim 55 wherein said changing step automatically changes in an iterative process a type of component of said one or more components.

Claim 61 (new). The method of claim 55 wherein said changing step manually changes in an iterative process a type of component of said one or more components.

Claim 62 (new). The method of claim 55 wherein said changing step automatically changes in an iterative process a manufacturer of said one or more components.

Claim 63 (new). The method of claim 55 wherein said changing step manually changes in an iterative process a manufacturer of said one or more components.

Claim 64 (new). The method of claim 55 wherein said changing step automatically changes in an iterative process a location of a component of said one or more components.

Claim 65 (new). The method of claim 55 wherein said changing step manually changes in an iterative process a location of a component of said one or more components.

Claim 66 (new). The method of claim 55 wherein said changing step automatically changes in an iterative process one or more of transmit power, channel or frequency, bandwidth, data rate, antenna type, antenna sector or positioning, modulation or coding type, protocol, data rate, switching in a spare component, resetting, or changing settings of a component of said one or more components.

Claim 67 (new). The method of claim 55 wherein said changing step manually changes in an iterative process one of transmit power, channel or frequency, bandwidth, data rate, antenna type, antenna sector or positioning, modulation or coding type, protocol, data rate, switching in a spare component, resetting, or changing settings of a component of said one or more components.

Claim 68 (new). A site specific system for modeling a communications network, comprising:

a display for displaying a site map of a site in which a communications network is or will be deployed;

identifier identifying locations on said site map where placement of one or more components of said communications network are not desirable or are desirable;

device for establishing one or more parameters of a desirable configuration of said communications network;

device for configuring a computer representation on said site map on said display a possible configuration of a communications network which includes a

plurality of said one or more components which are or may be used in the communications network, one or more of said components having at least one of performance data, cost data, maintenance data, and equipment settings stored in a database, said device for configuring positioning on said site map computer representations of said one or more components only at locations which are desirable and not at locations which are not desirable; and

device for determining one or more optimized or preferred configurations of said communications network based on a comparison of predicted or measured parameters for a configuration generated by said device for configuring with said one or more parameters of said desirable configuration established by said device for establishing.

Claim 69 (new). A site specific method for modeling a communications network, comprising:

displaying a site map of a site in which a communications network is or will be deployed;

identifying locations on said site map where placement of one or more components of said communications network are not desirable or are desirable;

establishing one or more parameters of a desirable configuration of said communications network;

configuring a computer representation on said site map on said display a possible configuration of a communications network which includes a plurality of said one or more components which are or may be used in the communications network, one or more of said components having at least one of performance data, cost data, maintenance data and equipment settings stored in a database, said means for configuring positioning on said site map computer representations of said one or more components only at locations which are desirable and not at locations which are not desirable; and

determining one or more optimized or preferred configurations of said communications network based on a comparison of predicted or measured parameters for a configuration generated by said means for configuring with said one or more parameters of said desirable configuration established in said